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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/614,019	07/08/2003	Yo Taniguchi	520.42912X00	9504

20457 7590 07/25/2008
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EXAMINER

CHENG, JACQUELINE

ART UNIT	PAPER NUMBER
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3768

MAIL DATE	DELIVERY MODE
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07/25/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/614,019	Applicant(s) TANIGUCHI ET AL.	
	Examiner JACQUELINE CHENG	Art Unit 3768	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10-16 and 18-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-16 and 18-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed April 23, 2008 have been fully considered but they are not persuasive. The applicant's added limitations to the claim do not overcome the prior art because these limitations are intended use. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. Since the prior art structure is capable of performing the intended use, it meets the claim. In fact as the claims are currently written the prior art only needs to have an inspection apparatus, a controller, and in some claims an arithmetic processor. To help remove some of the intended use of the controller the examiner suggests adding to the claim "said controller programmed to apply ...". However since the current rejection does actually have a controller programmed to apply the pulse sequences as claimed this change alone would not overcome the prior art, however does help further prosecution in bringing the claims closer to an allowable form. Another way to help further prosecution in bringing the claims in an allowable form is if the applicant wanted to instead of claim these steps in a system, claim them in a method. See MPEP section 2114 for further information about functional language and intended use in an apparatus claim.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1-12 and 20-22** are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 6,980,846 B2 (herein referred to as Hardy et al.) in view of US Patent No. 5,479,537 (herein referred to as Hamashima). Hardy et al. discloses a method for acquiring image data from a subject with an MRI system. It is well known to one skilled in the art at the time of the invention that an MRI system inherently comprises an RF coil for generating an RF magnetic field, a main static magnet (in which a subject is placed in) providing a static magnetic field, gradient coils (usually 3) to create magnetic field gradients and a controller to control the pulse sequences. In particular, Hardy et al. discloses an MRI system that acquires a reference data set of a region of interest, such as the motion of the heart or the heartbeat (col. 1 line 27-33), and then acquires a plurality of free-breathing data sets of this region of interest. The free-breathing data sets are then compared with the reference data set to be used in creating an image of the region of interest (col. 1 line 60-67).

4. In one embodiment of Hardy et al. it is disclosed that the reference data set is taken during a single breath-held time period (which could be either after inhaling or after exhaling) (col. 4 line 1-3). The comparison between the reference and free-breathing images are done through cross-correlations to decide which images should be kept and which are thrown away. If the feature of interest is present in any of the free-breathing images then the cross-correlation will reveal a strong central peak, if not, then the central peak will be offset. Even though Hardy et al. does not expressly disclose setting a threshold, to determine which images to reject there has to be some sort of threshold set. The amount of this threshold could be 1/m away from the 1,

m being greater than 2. Being closer to the 1.0 correlation (having a greater m value) would result in a more precise image reconstruction (col. 5 line 11-45).

5. Although this comparison is not done by using a similarity coefficient in particular, the results of the similarity coefficient and the cross-correlation are the same, the strong central peaks corresponding to the 1.0 correlations. Besides the fact that it would be obvious to use any sort of comparison method to obtain the proper images, Hamashima is an image comparison method which uses cross correlation and threshold cut off values to determine if an image matches a reference image. Although in the main embodiment Hamashima uses a 2D cross correlation/similarity coefficient, Hamashima also discloses that a directionality free, or scalar coefficient may be used (abstract, col. 6 line 10-15, col. 11 line 16-26).

6. As for the controller controlling the specific sequences claimed, a controller has control over the pulses, so therefore has control to create any sequence of pulse wanted.

7. **Claims 13-19, 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hardy et al. in view of Hamashima, and further in view of US Patent No. 5,668,474 (herein referred to as Heid). Hardy et al. discloses most of the invention claimed as described above as well as performing Fourier transformation to obtain reconstructions of the images (col. 1 line 27-28, col. 2 line 58-61). It would be obvious to one with ordinary skill in the art at the time of the invention to perform a Fourier transform of any data that needs to be reconstructed into an image at no matter what point in the sequence.

8. What Hardy et al. does not disclose is the alternating polarity of the pulse sequence. Heid discloses a pulse sequence in which the readout magnetic field gradient and the phase-encoding

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magnetic field has alternating polarities (figure 1-4, col. 1 line 47-65). It would be obvious to one with ordinary skill in the art at the time of the invention to combine Heid with Hardy et al. and Hamashima as Heid discloses a pulse sequence for use in NMRI. Any pulse sequence can be applied to an MRI system, such as the MRI system of Hardy et al.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JACQUELINE CHENG whose telephone number is (571)272-5596. The examiner can normally be reached on M-F 10:00-6:30.

10. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

11. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Brian L Casler/
Supervisory Patent Examiner, Art Unit
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